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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,927	01/29/2004	Miho Watanabe	118484	2656

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EXAMINER

THOMAS, JAISON P

ART UNIT	PAPER NUMBER
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1751

DATE MAILED: 09/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/765,927

Applicant(s)

WATANABE ET AL.

Examiner

Jaison P. Thomas

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-62 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2 and 4-15 is/are allowed.
- 6) ☒ Claim(s) 1,3 and 16-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 23-62 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is in response to amendments filed on 7/6/2006.
2. Claims 1,4,9,16 and 19 are amended.
3. The restriction of Claims 23-62 stand restricted.
4. The rejection of Claim 18 and 21 under 35 USC 112 has been withdrawn in response to applicant's amendments of the claims.
5. The rejection of Claim 1 under 35 USC 102 in view of Fisher et al. (US Patent 6203814) has been withdrawn in view of applicant's amendments to the claims.
6. The rejection of Claims 1 and 22 under 35 USC 102(e) in view of Niu et al. (US Patent Pub. 2003/0086858A1) are withdrawn in view of applicant's amendments to the claims.
7. The rejections of Claims 2-12 and 16-21 under 35 USC 103(a) in view of Niu et al. are withdrawn in view of applicant's amendments to the claims.
8. The nonstatutory obviousness-type double patenting rejections of Claims 1, 18 and 22 over Claims 1,5,9 of copending Application No. 10/935174 are withdrawn in view of applicant's amendments.
9. The nonstatutory obviousness-type double patenting rejections of Claims 1, 2 and 22 over Claims 1,2, and 15 of copending Application No. 10/768039 are withdrawn in view of applicant's amendments.
10. The nonstatutory obviousness-type double patenting rejections of Claim 3 over Claims 11 of copending Application No. 10/537745 are withdrawn in view of applicant's amendments.

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11. The objection to Claim 16 has been withdrawn in view of applicant's amendments to the claims.

Response to Arguments

12. Applicant's arguments filed 7/6/2006 with respect to the restriction requirement have been fully considered but they are not persuasive. Applicant argues that a thorough search for the subject matter of any one Group of the restricted claims would encompass a search for the subject matter of the remaining claims. The Examiner respectfully disagrees with applicant's arguments and refers the applicant to the earlier office action wherein it was stated that the different groups identified would be classified in different classes and therefore would require a different search for each group. Applicant's further argue that since Claims 1-22 are in condition for allowance, Claims 23-62 should be rejoined on and considered on the merits. The Examiner respectfully disagrees with applicant's and refers applicant to the rejections discussed below.

13. Applicant's amendments to the claims have rendered the rejections cited in the Office Action dated 4/6/2006 moot.

Claim Rejections - 35 USC § 102/103

14. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the

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applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 1,3,16-22 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Park et al. (US Patent 7008758).

Park et al. teaches a method of manufacturing a patterned film of surface modified carbon nanotubes wherein the composition contains surface modified carbon nanotubes (modified with carboxylic acid groups and a double bond containing compound of Formulae 1 (Column 2, lines 54-67) or 2 (Column 3, lines 1-17)) and further including a photoinitiator. The composition is spread on a substrate and then exposed to a UV light through a photomask which results in a patterned film containing a photopolymerized carbon nanotube structure (Column 2, lines 20-37) wherein the functional groups on the carbon nanotubes are crosslinked together (Column 2, lines 44-51). Park teaches that such a film can be used for a variety of electronics including flat panel displays, transistors, energy storing devices and electronic devices of nano-size applications (which examiner construes as including resistance elements as required by Claim 1) (Column 1, lines 57-61).

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16. In the alternative, Park et al. is relied upon as disclosed above, however, it does not teach the 1) specific reactions used to link the carbon nanotube functional groups together as required by Claim 17 and 19, or 2) the requirement of multi-wall nanotubes as required by Claim 22, or 3) the structure of the cross-linked site chemistry of Claim

With respect to 1), it would have been obvious to one of ordinary skill in the art at the time the invention was made to understand that the cross-linking of the nanotubes discussed in Park et al. would occur by one of the reaction mechanisms cited in the claims since the reactions are notoriously well known in the art among reactions occurring between functional groups of organic molecules.

With respect to 2), it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize multi-walled carbon nanotubes in film disclosed by Park et al. since Park welcomes the use of all types of carbon nanotubes that are commercially available (Column 4, lines 1-3) and the selection of a multi-walled carbon nanotube would be an obvious design choice.

With respect to 3), it would have been obvious to one of ordinary skill in the art at the time the invention was made to realize that one possible chemical structure that would result from the cross-linking of the carbon nanotubes present in Park et al. would include the structure disclosed in Claim 21 depending on the selection of the chemical substituents disclosed in Formula 2.

Allowable Subject Matter

17. Claims 2,4-15 are allowed. The prior art does not teach nor suggest a resistance element comprised of a patterned carbon nanotube structure having a mesh structure wherein the plural nanotubes are cross-linked to another by the chemical structures disclosed in Claim 2.

Conclusion

18. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jaison P. Thomas whose telephone number is (571) 272-8917. The examiner can normally be reached on Mon-Fri 8:30 am to 5:00 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas McGinty can be reached on (571) 272-1029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jaison Thomas
Examiner
9/18/2006


Mark Kopeck
Primary Examiner